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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,670	09/17/2003	Qixu David Chen	50103-531	2476

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EXAMINER

RICKMAN, HOLLY C

ART UNIT PAPER NUMBER

1773

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/663,670

Applicant(s)

CHEN ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,6-24,26 and 27 is/are pending in the application.  
4a) Of the above claim(s) 19-22,26 and 27 is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-3,6-14,23-24 is/are allowed.  
6) ☒ Claim(s) 15-18 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The rejection of claims 5, 7 and 28 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

### ***Claim Rejections - 35 USC § 102***

2. The rejection of claim 28 under 35 U.S.C. 102(b) as being anticipated by Lambeth et al. (US 6248416) is withdrawn in view of Applicant's amendments.

### ***Claim Rejections - 35 USC § 102/103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The rejection of claims 1-3, 9-18, 23-25 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Carey et al. (US 6835475) is withdrawn in view of Applicant's amendments and arguments.

### ***Claim Rejections - 35 USC § 103***

5. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 6835475) in view of Hokkyo et al. (US 6387483).

Carey et al. disclose a perpendicular magnetic recording medium having a substrate, a soft magnetic layer, a first Ru spacer layer corresponding to the claimed first crystalline non-magnetic interlayer, a second Ru spacer layer corresponding to the claimed second crystalline interlayer and a perpendicular magnetic recording layer thereon. See col. 5, line 64 to col. 6, line 41; claim 7. The reference fails to disclose the roughness of the magnetically soft underlayer.

Hokkyo et al. disclose a perpendicular magnetic recording medium having a soft magnetic underlayer deposited to have a smooth surface in order to improve surface smoothness of the overlying layers thereby lowering medium noise (col. 2, line 48 to col. 3, line 7). Thus, the reference teaches that soft magnetic layer surface smoothness is a result effective parameter that affects recording properties including media noise.

It would have been obvious to one of ordinary skill in the art at the time of invention to minimize the surface roughness of the soft magnetic layer disclosed by Carey et al. in order to achieve a smooth surface (i.e., as close to 0 nm as possible) thereby reducing medium noise as suggested by Hokkyo et al.

It is noted that the claims include process limitations directed to the method of making the first and second crystalline layers and the soft magnetic layer. There is no evidence of record to suggest that the claimed method steps result in a product that is materially different from that set forth in the prior art. It has been held that even though product-by-process claims are limited and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

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unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

***Allowable Subject Matter***

6. Claims 1-3, 6-14 and 23-24 are allowable over Carey et al. as applied above. Carey et al. fails to teach or suggest the hcp magnetic layer with <0002> out-of-plane growth as required by claim 1 and all claims depending thereon. The reference also fails to teach a structure as claimed wherein the second crystalline interlayer has adjacent grains that are physically separated. Instead, the reference teaches grains that are directly bordering one another with no separation in between. The prior art fails to suggest motivation to separate the grains of this interlayer structure.

***Withdrawn Claims***

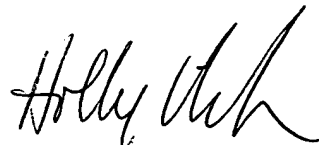
7. Claims 19-22 and 26-27 have been withdrawn as being directed to a non-elected method. Applicant's request for rejoinder is acknowledged. However, the claims must include all limitations of any single allowable article claim. In their present form, the method claims do not include all limitations of any of the article claims, allowable or otherwise. Applicant is asked to amend the claims accordingly if rejoinder is still requested in the next response.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish at the end.

Holly Rickman  
Primary Examiner  
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